

IT IS CLAIMED

1. A method for implementing system modification operations in an information storage and retrieval system, the information storage and retrieval system including persistent memory configured or designed to store object data, the persistent memory including at least one data file for storing object data, the method comprising:

receiving a first system modification request relating to a first data file, the first data file including a first object stored therein;

implementing the first system modification request, wherein implementation of the first system modification request includes suspending write access to the first data file; and

storing updated information relating to the first object in the persistent memory concurrently while the first system modification request is being implemented.

2. The method of claim 1 wherein said implementing includes closing at least one table space associated with the first data file.

3. The method of claim 1 wherein the information storage and retrieval system corresponds to a non-positional, non-log based information storage and retrieval system.

4. The method of claim 1 wherein the at least one data file includes a disk drive.

5. The method of claim 1 wherein the first data file corresponds to a primary data file;

wherein the system modification request corresponds to a request to add a mirror data file to be associated with the primary data file; and

wherein implementation of the first system modification request further includes copying object data from the primary data file to the mirror data file.

6. The method of claim 5 wherein the addition of the mirror data file is automatically implemented in response to predetermined criteria.

7. The method of claim 1 wherein the first data file corresponds to a primary data file;

wherein the system further includes a mirror data file associated with the  
5 primary data file;

wherein the system modification request corresponds to a request to take the primary data file off-line; and.

8. wherein implementation of the first system modification request further  
10 includes swapping assignments of the primary and mirror data files.

9. The method of claim 1 wherein the first data file corresponds to a primary data file;

wherein the system further includes a mirror data file associated with the  
15 primary data file; and

wherein the system modification request corresponds to a request to take the mirror data file off-line.

10. The method of claim 1 wherein the first data file corresponds to a primary data file;

wherein the system modification request corresponds to a request to take the primary data file off-line; and

wherein implementation of the first system modification request further comprises copying object data stored on the primary data file to at least one other data  
25 file in the persistent memory.

11. The method of claim 10 wherein the first system modification request is implemented without closing a table space of the at least one other data file.

30 12. The method of claim 1 further comprising implementing the first system modification request concurrently while providing database access to end users.

13. The method of claim 12 wherein said database access includes read access to object data stored on the first data file.

14. The method of claim 12 wherein said database access includes write access to the persistent memory for storing updated object data relating to the first object.

15. The method of claim 12 database access includes write access to at least one other data file in the persistent memory for storing updated information relating to at least one object stored on the first data file

16. The method of claim 1 further comprising performing an update to the first object concurrently while implementing the first system modification request.

17. The method of claim 1 wherein the implementing of the first system modification request is performed in real-time, without blocking access to object data stored in the persistent memory.

18. A computer program product, the computer program product including a computer usable medium having computer readable code embodied therein, the computer readable code comprising computer code for implementing the method of claim 1.

19. A method for implementing system modification operations in an information storage and retrieval system, the information storage and retrieval system including persistent memory configured or designed to store object data, the persistent memory including a first data file and a second data file, the first data file including first object data stored therein, the method comprising:

receiving a first system modification request to remove the first data file from the persistent memory;

implementing removal of the first data file from the persistent memory; and

providing continuous access to object data stored in the persistent memory concurrently during the removal of the first data file.

20. The method of claim 19 further comprising providing continuous data  
5 update access to the first object data concurrently during the removal of the first data file.

21. The method of claim 20 wherein the removal of the first data file  
10 includes copying the first object data to the second data file.

22. The method of claim 19 wherein said implementing includes closing at  
least one table space associated with the first data file.

23. The method of claim 19 wherein the information storage and retrieval  
15 system corresponds to a non-positional, non-log based information storage and retrieval system.

24. The method of claim 19 wherein the first data file includes a disk drive.

25. The method of claim 19 wherein the removal of the first data file from  
20 the persistent memory is accomplished in real-time without taking the information storage and retrieval system off-line.

26. A computer program product, the computer program product including a  
25 computer usable medium having computer readable code embodied therein, the computer readable code comprising computer code for implementing the method of claim 19.

27. An information storage and retrieval system comprising:  
30 at least one processor; and  
memory;

the memory including persistent memory configured or designed to store object data;

the system being configured or designed to receive a first system modification request relating to a first data file, the first data file including a first object stored therein;

the system being further configured or designed to implement the first system modification request, wherein implementation of the first system modification request includes suspending write access to the first data file; and

the system being further configured or designed to store updated information relating to the first object in the persistent memory concurrently while the first system modification request is being implemented.

28. The system of claim 27 being further configured or designed to close at least one table space associated with the first data file during implementation of the first system modification request.

29. The system of claim 27 wherein the information storage and retrieval system corresponds to a non-positional, non-log based information storage and retrieval system.

30. The system of claim 27 wherein the at least one data file includes a disk drive.

31. The system of claim 27 wherein the first data file corresponds to a primary data file;

wherein the system modification request corresponds to a request to add a mirror data file to be associated with the primary data file; and

wherein implementation of the first system modification request further includes copying object data from the primary data file to the mirror data file.

32. The system of claim 31 wherein the addition of the mirror data file is automatically implemented in response to predetermined criteria.

33. The system of claim 27 wherein the first data file corresponds to a primary data file;

wherein the system further includes a mirror data file associated with the  
5 primary data file;

wherein the system modification request corresponds to a request to take the primary data file off-line; and.

34. wherein implementation of the first system modification request further  
10 includes swapping assignments of the primary and mirror data files.

35. The system of claim 27 wherein the first data file corresponds to a primary data file;

wherein the system further includes a mirror data file associated with the  
15 primary data file; and

wherein the system modification request corresponds to a request to take the mirror data file off-line.

36. The system of claim 27 wherein the first data file corresponds to a  
20 primary data file;

wherein the system modification request corresponds to a request to take the primary data file off-line; and

wherein implementation of the first system modification request further comprises copying object data stored on the primary data file to at least one other data  
25 file in the persistent memory.

37. The system of claim 36 wherein the first system modification request is implemented without closing a table space of the at least one other data file.

38. The system of claim 27 being further configured or designed to  
30 implement the first system modification request concurrently while providing database access to end users.

39. The system of claim 38 wherein said database access includes read access to object data stored on the first data file.

5 40. The system of claim 38 wherein said database access includes write to the persistent memory for storing updated object data relating to the first object.

41. The system of claim 38 wherein said database access includes write access to at least one other data file in the persistent memory for storing updated  
10 information relating to at least one object stored on the first data file

42. The system of claim 27 being further configured or designed to perform an update to the first object concurrently while implementing the first system modification request.  
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43. The system of claim 27 being further configured or designed to implement the first system modification request in real-time, without blocking access to object data stored in the persistent memory.

20 44. An information storage and retrieval system comprising:  
at least one processor; and  
memory;  
the memory including persistent memory configured or designed to store object data;  
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the system being configured or designed to receive a first system modification request to remove the first data file from the persistent memory;

the system being further configured or designed to implement removal of the first data file from the persistent memory; and

30 the system being further configured or designed to provide continuous access to object data stored in the persistent memory concurrently during the removal of the first data file.

45. The system of claim 44 being further configured or designed to provide continuous data update access to the first object data concurrently during the removal of the first data file.

5 46. The system of claim 45 wherein the removal of the first data file includes copying the first object data to the second data file.

47. The system of claim 44 being further configured or designed to close at least one table space associated with the first data file during implementation of the first  
10 system modification request..

48. The system of claim 44 wherein the information storage and retrieval system corresponds to a non-positional, non-log based information storage and retrieval system.  
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49. The system of claim 44 wherein the first data file includes a disk drive.

50. The system of claim 44 being further configured or designed to implement removal of the first data file from the persistent memory in real-time without  
20 taking the information storage and retrieval system off-line.

51. A computer program product for implementing system modification operations in an information storage and retrieval system, the information storage and retrieval system including persistent memory configured or designed to store object  
25 data, the persistent memory including at least one data file for storing object data, the computer program product comprising:

a computer usable medium having computer readable code embodied therein, the computer readable code comprising:

computer code for receiving a first system modification request relating to a first  
30 data file, the first data file including a first object stored therein;



computer code for implementing the first system modification request, wherein implementation of the first system modification request includes suspending write access to the first data file; and

computer code for storing updated information relating to the first object in the persistent memory concurrently while the first system modification request is being implemented.

52. The computer program product of claim 51 wherein said implementing code includes computer code for closing at least one table space associated with the first data file.

53. The computer program product of claim 51 wherein the information storage and retrieval system corresponds to a non-positional, non-log based information storage and retrieval system.

54. The computer program product of claim 51 wherein the at least one data file includes a disk drive.

55. The computer program product of claim 51 wherein the first data file corresponds to a primary data file;

wherein the system modification request corresponds to a request to add a mirror data file to be associated with the primary data file; and

wherein the computer code for implementing the first system modification request includes computer code for copying object data from the primary data file to the mirror data file.

56. The computer program product of claim 55 wherein the addition of the mirror data file is automatically implemented in response to predetermined criteria.

57. The computer program product of claim 51 wherein the first data file corresponds to a primary data file;

wherein the system further includes a mirror data file associated with the primary data file;

wherein the system modification request corresponds to a request to take the primary data file off-line; and.

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58. wherein the computer code for implementing the first system modification request includes computer code for swapping assignments of the primary and mirror data files.

10 59. The computer program product of claim 51 wherein the first data file corresponds to a primary data file;

wherein the system further includes a mirror data file associated with the primary data file; and

15 wherein the system modification request corresponds to a request to take the mirror data file off-line.

60. The computer program product of claim 51 wherein the first data file corresponds to a primary data file;

20 wherein the system modification request corresponds to a request to take the primary data file off-line; and

wherein the computer code for implementing the first system modification request comprises computer code for copying object data stored on the primary data file to at least one other data file in the persistent memory.

25 61. The computer program product of claim 60 further comprising computer code for implementing the first system modification request without closing a table space of the at least one other data file.

30 62. The computer program product of claim 51 further comprising computer code for implementing the first system modification request concurrently while providing database access to end users.

63. The computer program product of claim 62 wherein said database access includes read access to object data stored on the first data file.

5 64. The computer program product of claim 62 wherein said database access includes write access to the persistent memory for storing updated object data relating to the first object.

65. The computer program product of claim 62 database access includes write access to at least one other data file in the persistent memory for storing updated  
10 information relating to at least one object stored on the first data file

66. The computer program product of claim 51 further comprising computer code for performing an update to the first object concurrently while implementing the first system modification request.  
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67. The computer program product of claim 51 further comprising computer code for implementing the first system modification request in real-time, without blocking access to object data stored in the persistent memory.

20 68. A system for implementing system modification operations in an information storage and retrieval system, the information storage and retrieval system including persistent memory configured or designed to store object data, the persistent memory including at least one data file for storing object data, the computer program product comprising:

25 means for receiving a first system modification request relating to a first data file, the first data file including a first object stored therein;

means for implementing the first system modification request, wherein implementation of the first system modification request includes suspending write access to the first data file; and

30 means for storing updated information relating to the first object in the persistent memory concurrently while the first system modification request is being implemented.

69. The computer program product of claim 68 wherein the information storage and retrieval system corresponds to a non-positional, non-log based information storage and retrieval system.

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70. The computer program product of claim 68 further comprising means for performing an update to the first object concurrently while implementing the first system modification request.

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71. The computer program product of claim 68 further comprising means for implementing the first system modification request in real-time, without blocking access to object data stored in the persistent memory.

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